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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/679,298

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Tetsuya Kanemaru

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FOLEY AND LARDNER LLP

SUITE 500

3000 K STREET NW

WASHINGTON, DC 20007

EXAMINER

BARHAM, BETHANY P

ART UNIT

PAPER NUMBER

1615

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/679,298	Applicant(s) KANEMARU ET AL.	
	Examiner Bethany P. Barham	Art Unit 1615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 10-20 is/are pending in the application.
- 4a) Of the above claim(s) 1-5 and 12-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-8, 10 and 11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Summary

Receipt of Applicant's Request for Continued Examination filed on 09/28/2007 is acknowledged. Receipt of Applicant's Arguments and Claims filed on 09/28/2007 is also acknowledged. Claims 1-8 and 10-20 are pending. Claims 1-5 and 12-20 remain withdrawn. Claims 6-8 and 10-11 are rejected.

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09/28/07 has been entered.

Applicant has requested acknowledgement of a certified copy of the priority document JP 2000-10146 filed with the parent application 09/753,569, a certified copy of the priority document JP 2000-10146 was filed 01/05/2006 in the instant application and for purposes of examination priority is currently being treated as 01/04/2000.

MAINTAINED REJECTIONS

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 6 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a heating range of 260 to 480°C for 0.1 to 24 hours (pg. 3, line 28, pg. 4, lines 21-22 and pg.8, line 5), it is not enabled for 260 to 500°C. Claim 6 has the limitation for 260 to 500°C and this limitation is not found in the instant specification, which instead teaches away from temperatures at and above 500°C (pg. 2, lines 2-3) or temperatures greater than 480°C (pg. 8, lines 7-11).

Claims 7-8 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a method of producing silicone treated powder wherein said powders have an average particle size of not more than 0.1 microns when heated in the second step at a temperature of 270°C for 3 hours and said powders have an average particle size of less than 0.1 microns when heated in the second step at a temperature of 400°C for 3 hours, does not reasonably provide enablement for the a method of producing silicone treated powders wherein said powders have an average particle size of not more than 0.1 microns when heated in the-second step at a temperature of 260°C - 350°C for 1-5 hours and said powders have an average particle size of less than 0.1 microns when heated in the second step at a temperature of 330°C - 480°C for 1-5 hours. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims. After carefully evaluating the instant specification, the examiner respectfully asserts that one of ordinary skill in the art would

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be forced to undergo undue experimentation in order to practice the invention commensurate in scope with these claims. Specifically, as set forth in the instant specification, coated powders have an average particle size of not more than 0.1 microns when heated in the second step at a temperature of 270°C for 3 hours or the coated powder can have an average particle size of less than 0.1 microns when heated in the second step at a temperature of 400°C for 3 hours (pages 9 - 17 in the instant specification). After carefully reviewing the instant specification, there is no data indicating that coated powders can have an average particle size of not more than 0.1 microns when heated in the second step at a temperature of 260°C - 320°C for 1-5 hours, but only at 270°C for 3 hours (pg. 15, example 3-1 and pg. 17, example 5-1); or that powders can have an average particle size of less than 0.1 microns when heated in the second step at a temperature of 330°C - 480°C for 1-5 hours. The examiner respectfully submits that this inconsistency is further evidence that one of ordinary skill in the art would be forced to undergo undue experimentation in order to practice the invention commensurate in scope with these claims.

Furthermore, Example 4 teaches a time of 10 minutes for the heat treatment of 300°C, this is also not commensurate with the scope of the claims as written.

Response to Arguments

Applicant's arguments and amendments with respect to claims 6-8 have been considered but are not persuasive. Claims 7-8 are specifically stating that the temperature at which the powder is 'heat' treated, determines the particle size of the

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material. The amendment only overcame the 'overlapping' temperature range of 330-350°C resulting in divergent particle sizes but still does not address the enablement issues with temperatures more than 480°C or up to 500°C (instant claim 6) which the applicant is not enabled for. Also not addressed is the ranges temperature or time as presented in instant claims 7-8, all examples disclosed in the specification only use a single temperature and time within the claimed ranges (270°C at 3 hours for claim 7 and 400°C at 3 hours for claim 8) resulting in enablement issues as stated above.

Claim Rejections 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6, 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 09-26871 ('871) in view of US 2002/014094 ('094).

The limitations of claim 6, and 10-11 are taught:

- '871 teach a method of coating a nanoparticle or powder with various silicon-based materials (paragraphs 0018 - 0051). The nanoparticles may be metal, organic pigment, or inorganic pigment (paragraphs 0027 -0028).

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- According to '871, the silicon precursors used to coat the powder contain at least one Si-H group and are represented by the following structural formula Claim 4 and paragraph 0018):



- Like the instant claim set, "c" can be 2 and "a" and "b" are within the ranges as set forth in the instant claim 6. According to '871, the powder substance can be coated with a silicone-based material at a temperature of about 400°C (paragraph 0046).
- '871 also teaches that since moisture can be evaporated and the crosslinking reaction of Si-H radicals promoted with this heating, stabilization of silicone covering is attained and hydrophobicity can be strengthened more by properly choosing the 'pendant radical' (paragraph 0039, 0041, and 0051).
- Although '871 teach that the powder may be heated to a temperature of about 400°C, '871 is silent with respect to the amount of time said powder should be heated.
- However, '094 teaches the advantages of heating the powder-particles at a temperature between 200°C - 500°C for a time period between 30 minutes to 4 hours. Like the instant claim set, said particles may be heat treated in an atmosphere of inert gas (paragraph 0101). As taught by '094, heating the powder-particles at a temperature of 200°C - 500°C for a time period between 30 minutes to 4 hours has the benefit of increasing the heat resistance, adhesion, and insulation of said particles (paragraph 0101).

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- Because, as set forth in '094, heating the powder-particles at a temperature of 200°C - 500°C for a time period between 30 minutes to 4 hours has the benefit of increasing the heat resistance, adhesion, and insulation of said particles, one of ordinary skill in the art would have been motivated at the time the invention was made to heat the particles advanced by '871 to a temperature of 200°C - 500°C for a time period between 30 minutes to 4 hours. Again, according to '871, the powder substance can be coated with a silicone-based material at a temperature of about 400°C. The examiner respectfully submits that '094 provide the requisite motivation to heat said particles for a time period between 30 minutes to 4 hours. Based on the teachings of '094, there is a reasonable expectation that heating the powder-particles at a temperature of 200°C - 500°C for a time period between 30 minutes to 4 hours would effectively modulate the heat resistance, adhesion, and insulation of said particles. As such, it would have been obvious to one of ordinary skill in the art at the time the invention was made to heat the particles advanced by '871 to a temperature of 200°C - 500°C for a time period between 30 minutes to 4 hours in view of teachings of '094.

Response to Arguments

Applicant's arguments with respect to claims 6-8 and 10-11 have been considered but are not persuasive. Applicant argues that treating the silicone material with heat of a range of up to 400°C as taught by '271 in view of '094 (which teaches 200-500°C for 0.5 to 4 hours) does not render obvious the instant claims (heat treatment of 260-500°C for

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0.1-24 hours), but the claims as written overlap with the prior art, and are therefore obvious. Heat treating silicone materials and crosslinking Si-H of the instant claims is known in the prior art in the overlapping with the temperature and time ranges of applicant and applicant's 132 declaration is not persuasive for the reasons above.\

NEW REJECTIONS

Claims 6, 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 08-092484 ('484).

The limitations of claims 6 and 10-11 are taught by '484:

- '484 disclose a method of coating a nanoparticle or powder with various silicon-based materials (paragraphs 0026 - 0164). According to '484, the silicon precursors used to coat the powder contain at least one Si-H group and are represented by the following structural formula:



- Like the instant claim set, "c" can be 2 and "a" and "b" are within the ranges as set forth in the instant claim 6. According to '484, the powder substance can be coated with a silicone-based material at a temperature up to 300°C for 1 hour or more (paragraph 0046) and Si-H can be further crosslinked with functional 'pendant' groups such as -OH (paragraph 0038).
- Like the instant claim set, the reaction may take place in the gaseous phase (paragraph 0046).

Claims 6, 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 09-26871 ('871) and JP 08-092484 ('484).

- '871 is taught above and further teaches the same structural formula:



- Like the instant claim set, "c" can be 2 and "a" and "b" are within the ranges as set forth in the instant claim 6 and that moisture can be evaporated and the crosslinking reaction of Si-H radicals promoted with this heating, stabilization of silicone covering is attained and hydrophobicity can be strengthened more by properly choosing the 'pendant radical' (paragraph 0039, 0041, and 0051).
- '871 does not teach the amount of time said powder should be heated; although '871 teach that the powder may be heated to a temperature of about 400°C.
- '484 is taught above and teaches the silicon precursors used to coat the powder that are heated and crosslinked but according to '484, the powder substance can be coated with a silicone-based material at a temperature up to 300°C for 1 hour or more (paragraph 0046).
- As such, it would have been obvious to one of ordinary skill in the art at the time the invention was made to heat the particles advanced by '871 to a temperature of about 400°C for a time period for 1 hour or more in view of teachings of '484. One of ordinary skill in the art would have been motivated to combine the teaching since both teach the same structural formula of Si coating and similar temperatures and crosslinking features. The examiner respectfully submits that

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'484 provide the requisite motivation to heat said particles for a time period of 1 hour or more. Based on the teachings of '484, there is a reasonable expectation that heating the powder-particles at a temperature of up to 300°C for a time period of 1 hour or more would effectively modulate the heat resistance, crosslinking, adhesion, and hydrophobicity of the molecules.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bethany Barham whose telephone number is (571)-272-6175. The examiner can normally be reached on Monday to Friday; 8:30 a.m. to 5:00 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward can be reached on (571) 272-8373. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Bethany Barham
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MICHAEL P. WOODWARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600